DOCUMENT RESUME

ED 089 504 EC 061 448

TITLE	Dale Avenue School Early Childhood Education Center Project. Research Bulletin Volume III, No. 2, June 1973.
INSTITUTION	Paterson Board of Education, N.J.
SPONS AGENCY	Bureau of Elementary and Secondary Education (DHEW/OE), Washington, D.C.
PUB DATE	Jun 73
NOTE	26p.; For related information see EC 061439 through EC 061447, and EC 061449
EDRS PRICE	MF-$0.75 HC-$1.85 PLUS POSTAGE
DESCRIPTORS	Behavioral Objectives; *Culturally Disadvantaged; Disadvantaged Youth; *Evaluation; Exceptional Child Education; *Exceptional Child Research; *Handwriting; *Primary Grades
IDENTIFIERS	Elementary Secondary Education Act Title III; ESEA Title III; Paterson (New Jersey)

ABSTRACT

Reported are results of an evaluation of the handwriting skills of first, second, and third level students who were part of an urban early childhood education project for culturally disadvantaged children in Paterson, New Jersey. Provided is a summary of A. Gesell and F. Ilg's recommendations for handwriting instruction for kindergarten through third level children. A table lists writing skills expected from children 3 1/2 to 9 years of age. Provided is a listing of the 24 performance objectives used to teach writing and motor skills to project students. The writing performance of project children is said to compare favorable with expectations in areas such as making letters the correct size (first level children), spacing between words (second level children), and mixing cursive with manuscript (third level children). Tables include the samples copied at each level and the percentages of children at each level who need to improve letter information (by individual letters). It is stressed that legible handwriting is important for clear thinking and as a means of communication. (DB)

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DALE AVENUE SCHOOL

PATERSON, NEW JERSEY

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PATERSON BOARD OF EDUCATION

RESEARCH BULLETIN VOLUME III NO. II

June, 1973

EC061448

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Handwriting Research

Several members of the Dale Avenue School staff were concerned that the writing tasks taught in the kindergarten, first, second, and third level at Dale Avenue School might be too difficult for the developmental level of the children in these grades. The subject of writing, both manuscript and cursive was, therefore, researched.

Dr. Arnold Gesell, in his chart on writing from the early childhood section of "The Encyclopedia of Education", (See Table I) refers to the developmental, not chronological age of children. Some children who are chronologically seven years of age may be functioning developmentally as five year olds and should be expected to do what five year olds can do. Another seven year old may be working developmentally like an eight or nine year old. Examining a child's writing sample and checking it off against Gesell's developmental writing chart should indicate at what level that child is functioning in writing.

The following suggestions for a writing curriculum were indicated by Ilg and Ames in "School Readiness" and by Gesell and Ilg in "The Child from Five to Ten".

KINDERGARTEN (5 to 6)

1. Small or lower case letters should probably not be taught in kindergarten but at a later date when the children have better visual and manual control. Children have enough trouble with reversals at five and a half without adding to their burdens by requiring that they make small letters, which tend to reverse more than the capital letters do.

FIRST LEVEL

1. The fact that six year olds make small letters large like capitals suggests that perhaps they should work with capitals alone until they are ready to make the small letters as small letters.

2. Six year olds need to be in motion and are ever eager to move to other activities. It is, therefore, questionable whether first level children should spend long periods of time practicing writing skills. This is in all probability very difficult for them.

3. Six year olds cannot copy from the blackboard with facility as yet and should not be expected to do so.

4. When six year olds begin to print small letters small they still may tend to reverse them and to revert to capital letters. Capitals are easier to form and have less reversability. With certain children capitals should probably be used throughout first grade or at least until children show spontaneous desire to shift to small letters. (Although many six year olds recognize their reversals they don't always stop to correct them).

TABLE I

Gesell Writing Chart - From Early Childhood section of The Encyclopedia of Education.

3½ Years - Makes controlled lines, then scribbles.
In copying a cross, may split the horizontal line.
Likes to put a 'frame' around paper.

4 Years - Letters - Prints a few capital letters, large and irregular. Prefers circular letters as C, G, O, S; or angular letters as Z, N, I, L, T, A.
Selects first letters usually of familiar names as own name or of a member of family: T for Tommy, C for Charles.
Letters are often made with many parts (four parts to E).
Prints on page at random. Variable positions of letters and may lie flat in horizontal position. Seldom reverses.
Name - May attempt to print own name (girls especially).
Some print first few letters and mark for remaining ones.
May split name in middle and continue on next line.

5 Years - Letters - Prints some letters of varying sizes, in various positions and usually large. May be vertically reversed.
Letters formerly made in three parts are now made in two parts.
Asks help in forming or identifying letters already drawn. "How do you make F?" "What isn't any (letter) is it?"
May recognize a letter that is in own name without identifying it.
May write from right to left without reversing any letters.
Some like to copy letters and frequently do so from right to left.
Name - Prints first name, or nickname, large and irregular.
Printing gets larger toward end of name.
Numbers - May print certain numbers which have significance. (5 for own age; 12 for 12 o'clock).
May write some from dictation.
May copy from the clock or calendar.
Some draw on a page from right to left without reversing.
Some draw in a confused manner or reverse.
Marked variation in ability to write numbers. Some can write into teens and usually reverse the position of the separate digits (31 for 13). Frequently omit a number.

6 Years - Letters - Prints most of the capital letters with several reversals (usually horizontal, fewer vertical).
Prints some words. May use all capitals and may use a mixture of capitals and small letters without differentiating their size.
Letters are now more apt to be drawn with a continuous stroke.
Prints large and increasingly larger letters as proceeds across page. Certain letters may be consistently drawn larger.
Beginning to recognize reversals but may not change.

TABLE I -Gesell Writing Chart (Con'd)

Likes to use variety of materials: Writes on blackboard with chalk, or on large paper with crayon. Later able to handle writing at desk with a pencil.
Name - Prints first or both names and may add middle name or add Junior at end usually in all capital letters. Letters large and uneven. May reverse a letter (especially S). May not separate names, or may write one under the other.
Some print increasingly larger; some increase, decrease and then increase; others maintain fairly uniform size and write with an undulating line.
Numbers - Many can write from 1-20. Print numbers large in horizontal rows.
May reverse order of digits in teens either in final product, or in execution (writes end digit first and places one in front of it).
Reverses one or two digits (3, 7, or 9 more usual).

7 Years - Words - Prints or writes words and sentences, in capital and small letters.
Beginning to differentiate height of capital and small letters, but may make about the same height. Capital may be substituted for a small letter.
Writing is somewhat smaller and in a few it is greatly reduced in size.
Corrects letter reversals (usually 6½ years), but still makes an occasional letter in reversed position. May place letters in reversed order or omit a letter.
Beginning to separate words but sentences usually run together.
Tends to reduce letters in size as writes across page.
Prefers ruled paper. Some want large space, some small.
Likes to copy sentences.
Pencil grasp is tight with the forefinger caved in and the shoulder is tensed. Now prefers pencil rather than crayon for writing.
Likes to write correctly and erases a good deal.
Numbers - Writes 1-20 or higher usually without error. May still reverse one, sometimes two numbers. The same number may be reversed as a single digit and not when it appears in the teens or vice versa. (6 and 9 most frequent; also 4 or 7).
Figures are smaller, and considerably smaller with a few children.
Usually place numbers in one horizontal row at top of page, but some write in vertical column at this age.

TABLE I - Gesell Writing Chart (con'd)

8 Years - Words - Can write several sentences.
Considerable variation in writing. Many now do cursive writing instead of printing.
Write fairly large and rather "squarely" usually with slight slant. A few still write large and very irregularly. Some write a medium size and somewhat evenly though still quite straight. Letters may be wider. If writing is becoming smaller, then capitals and looped letters tend to be disproportionately tall.
Reversals are now rare.
Now beginning to space words, sentences and paragraphs.
Tries to write neatly although sometimes hurries and does not care.
Still may not be able to write down all the ideas he has for a story.
Name - Writes both names with good spacing and correct use of capital and small letters. Considerable discrepancy in size between capitals and small letters.
Great variation from child to child in size and style of writing.
Numbers - In writing 1-20 does not reverse single digit. May reverse order in number 20 (02).
In written number work may still have an occasional reversal of a digit especially when making a double number.

9 Years - No longer prints, unless manuscript is to be continued form of writing.
Handwriting is now a tool. Writes for extended periods.
Writing is smaller, neater, more even, and slanted. The pressure is lighter (especially in girls). Some write with upward slant and some make letters irregularly.
Letters are in good proportion.
Some now have a skillful 'style'.
Now use finger movements with tension in the forearm.
Increase in speed and in volume of writing.
Occasional error when copying or in recording dictated numbers.

SECOND LEVEL

1. Seven year olds are frequently seen with heads resting on forearms while they write. They show temporary fatigue with some tasks by shoving their desks, opening and closing their desk tops or getting up from their chairs. These signs show they are ready to change to a different activity and they should be allowed to do so.

2. There are many individual differences at seven. Some children prefer work at their desks to work presented by the teacher on the blackboard and vice versa. Seven year olds do not combine the two easily. They still cannot copy from the blackboard with facility.

3. Seven year olds should no longer use widely spaced lined paper as this is no longer natural to them. They desire to write smaller and have the ability to do so.

4. Several seven year olds may ask to "write" rather than print. Maintaining the pencil in contact with the paper may give them more security of motor control.

THIRD LEVEL

1. Eight year olds can shift their eyes more easily from blackboard to desk. They can copy from the board and also like to write on the board while classmates watch their performance.

2. Despite the eight year old's facility he should not always be expected to write out a story to full length. He may wish an opportunity to dictate the unfinished portion, or to continue it later.

3. Eight year olds struggle with cursive writing and we might well question the reason for instituting cursive writing in the third grade. Printing is more congenial to eight year olds whose desire for speed is hampered by cursive writing.

After looking over the research which described the general population, the decision was made to do our own research at Dale Avenue School in the first, second and third levels to determine if the literature applied to our children and also to provide feedback for teachers on each child's skills and needs.

Each first level child was given instructions to copy a sheet containing capital and lower case letters and numbers from one to ten (See Table II) onto large spaced first grade handwriting paper. The children all began the handwriting test at the same time. Ninety-seven percent of them completed the work in twenty-five minutes.

TABLE II

a b c d e f g h i j k l

m n o p q r s t u v w

x y z

A B C D E F G H I J

K L M N O P Q R

S T U V W X Y Z

1 2 3 4 5 6

7 8 9 10

Although the Gesell Writing Chart (Table I) indicates that first level (6 to 7 year olds) children make small letters large like capitals only three percent of the Dale Avenue first level children made the lower case letters capital size. Only twenty-seven percent of the Dale Avenue first level children made any reversals although the Gesell research indicated that six year olds print most of the capital letters with several reversals.

Although the Gesell Chart indicated that 6 year old children print their letters large and uneven only one percent of the first level Dale Avenue children needed practice in staying within the lines and three percent in making their letters the proper size.

Although most of the Dale Avenue first level children had little difficulty printing, some of the children did need practice in printing some capital, lower case letters, and numbers. (See Table III).

As can be seen in Table III, the printing of only four capital letters (K, Q, V, and Y) presented problems to fifteen percent or more of the first level Dale Avenue group, while ten lower case letters, (a,b,d,g,j,k,p,q,s,t,) presented difficulties.

A paper that was smudged or with many erasures was considered sloppy. Only eight percent of the first level children handed in this calibre paper.

Only two percent didn't follow directions.

While twenty-three percent of the first level children left letters or numbers out, only five percent repeated letters or numbers.

It is the hope of the Title III staff that the inclusion of writing and motor skills performance objectives (See Table IV) in the curriculum of the Dale Avenue School played an important role in the fine writing performance of the first level children. Since the writing and motor skills were developed sequentially the children move through these skills at their own rate from Pre-Kindergarten through level three. This sequential development of eye-hand exercises reinforces visual comparison skills of the children.

Although the literature suggests that seven year olds cannot copy from the blackboard with facility, most of the ninety-seven second level children at Dale Avenue had little difficulty performing this skill.

TABLE XXI

PERCENTAGES OF FIRST LEVEL DALE AVENUE CHILDREN WHO NEED PRACTICE WITH SPECIFIC CAPITAL OR LOWER CASE LETTERS AND NUMBERS:

A - 1%	K - 25%	U - 26%	d - 18%	n - 7%
B - 7%	L - 1%	V - 10%	e - 7%	o - 6%
C - 8%	M - 5%	W - 3%	f - 6%	p - 23%
D - 9%	N - 9%	X - 3%	g - 17%	q - 36%
E - 4%	O - 13%	Y - 17%	h - 4%	r - 11%
F - 6%	P - 5%	Z - 12%	i - none	s - 16%
G - 7%	Q - 28%		j - 44%	t - 30%
H - 2%	R - 5%	a - 17%	k - 40%	u - 6%
I - 7%	S - 5%	b - 15%	l - 1%	v - 3%
J - 1%	T - 3%	c - 6%	m - 12%	w - 2%
				x - 10%
1 - 1%	4 - 5%	7 - 3%	10 - 8%	y - 14%
2 - 7%	5 - 4%	8 - 23%		z - 6%
3 - 5%	6 - 6%	9 - 7%		

TABLE IV - WRITING AND MOTOR SKILLS

KINDERGARTEN THROUGH THIRD LEVEL PERFORMANCE OBJECTIVES:

WMS-1 Moves a crayon any way desired to fill in a 4 x 4" square on a large size piece of paper. (scribbling over lines is acceptable).

WMS-2 Draws vertical line evenly and smoothly

WMS-3 Draws horizontal line evenly and smoothly.

WMS-4 Draws diagonal line evenly and smoothly.

WMS-5 Draws curved line evenly and smoothly.

WMS-6 Traces basic shapes (circle, square, triangle, rectangle) with templates.

WMS-7 Cuts continual straight line.

WMS-8 Cuts curved line.

WMS-9 Cuts pattern containing complicated rotations and reversals.

WMS-10 Indicates knowledge of direction in relation to self in space by making a square, or circle, on the blackboard.

WMS-11 Pastes one end of paper strip to another to form rings for chains.

WMS-12 Copies basic shapes on 8½ x 11" piece of paper when paper is presented in a horizontal manner. (Circle, square, triangle, rectangle, cross).

WMS-13 Draws circle, square and triangle.

WMS-14 Combines verticle, horizontal, diagonal and curved lines into simple forms.

WMS-15 Draws circle in both directions.

WMS-16 Copies name correctly.

WMS-17 Copies all upper and lower case letters at near point from a paper that is placed on child's desk.

WMS-18 Copies all upper and lower case letters at far point from the blackboard.

WMS-19 Copies words required in basic sight vocabulary correctly. (Listed in Decoding #5).

WMS-20 Copies, from blackboard to paper, the name of school, grade level and date, without any substitution of letters.

WMS-21 Produces uniformity in size of letters when copying letters and words from blackboard to paper. Sample should include ten examples of upper and lower case letters.

WMS-22 Provides uniform space between words when doing written work.

WMS-23 Uses capital letter at beginning of sentence, for names and for the word I.

WMS-24 Legibly writes words and sentences from dictation.

The writing forms presented to the second level children included a smaller near point copy sample than the one used by the first level children. (See Table V). A far point sample (See Table VI) was also included. The handwriting paper, although still quite large, had smaller ruled spaces between the lines than that used by the first level children. The children were told not to rush but to do careful and neat work. When a child finished copying the near and far point samples, a number, indicating how long it took him to complete the work, was placed in the upper right hand corner of the paper. A number 1 in the corner indicated that a child had taken from five to nine minutes to complete the work; a number 2 meant ten to fourteen minutes, etc. 2% of the second level children completed the writing tasks in 5 minutes; 8% in 10 minutes; 11% in 15 minutes; 31% in 20 minutes; 30% in 25 minutes and 18% in 30 minutes.

Some children still needed practice in printing some capital and lower case letters. (See Table VI-A).

In the near point sample, none of the second level children handed in smudged papers and all of them completed their work.

Cursive writing is not taught at the second level but one percent of the children mixed the cursive with manuscript.

Only one percent of the children repeated the letters or didn't follow directions.

Six percent of the children made reversals and twelve percent left letters or numbers out.

None of the children made lower case letters capital size or lower case letters in place of capitals.

Thirteen percent of the second level children needed practice in size, slant and/or spacing between the letters.

In the farpoint sample thirty-nine percent of the second level children left out punctuation, eighteen percent left out letters, words or numbers.

The Gesell Writing Chart (Table I) indicates that seven year olds have just begun to separate words but sentences usually run together. Only twenty-two percent of the Dale Avenue second level children had too little space between words and/or too much space between letters.

Only two percent of the children handed in smudgy, shaky work with many erasures. Only one percent did not follow directions and three percent didn't complete the board work.

TABLE V

a b c d e f g h i j k l m n o

p q r s t u v w x y z

A B C D E F G H I J

K L M N O P Q R

S T U V W X Y Z

1 2 3 4 5 6

7 8 9 10

TABLE VI

Today is Tuesday, February 6, 1973. This year February has twenty-eight days. On Leap Year it has twenty-nine.

TABLE VI-A

A - 3%	K - 7%	U - 5%	d - 9%	n - 2%
B - 9%	L - 3%	V - 1%	e - 12%	o - 6%
C - 12%	M - 4%	W - 6%	f - 11%	p - 3%
D - 12%	N - 16%	X - 4%	g - 8%	q - 10%
E - 3%	O - 7%	Y - 4%	h - 3%	r - 8%
F - 7%	P - 1%	Z - 12%	i - 2%	s - 2%
G - 10%	Q - 5%		j - 12%	t - 11%
H - 1%	R - 3%	a - 5%	k - 11%	u - 4%
I - 4%	S - 7%	b - 3%	l - 0	v - 2%
J - 3%	T - 6%	c - 5%	m - 8%	w - 5%
1 -	4 - 4%	7 - 1%	10 -	x - 3%
2 - 3%	5 -	8 - 9%		y - 5%
3 - 3%	6 - 5%	9 - 4%		z - 8%

The children worked carefully and quickly and it was the opinion of the staff that the performance of the second level children compared very favorably with what the research indicates seven year olds can do in the area of writing.

The writing forms presented to the third level children included a nearpoint sample of lower case and capital manuscript letters, numbers 1 to 10 (See Table V), and capital and lower case cursive letters. (See Table VII).

The children were given the same wide-spaced ruled penmanship paper as the second level children for the manuscript portion and notebook lined regularly spaced white paper for the cursive portion. The third level children were also asked to copy several sentences from the board in manuscript and several in cursive. They were also each asked to write their own sentences in cursive. The third level, like the second level children were timed. 2% of the third level children completed this more complex handwriting task in 15-19 minutes, 21% in 20-24 minutes, 27% in 25-29 minutes, 27% in 30 to 34 minutes and 23% in 35 minutes or over.

The Gesell research (Table I) indicates that at eight years of age (3rd grade level) reversals are very rare. Less than one percent of the Dale Avenue third level children made letter reversals. The research also cited that children in this age group were just beginning to space words, sentences and paragraphs. Twenty-six percent of the Dale Avenue third level children had either not enough space between letters or words or too much space.

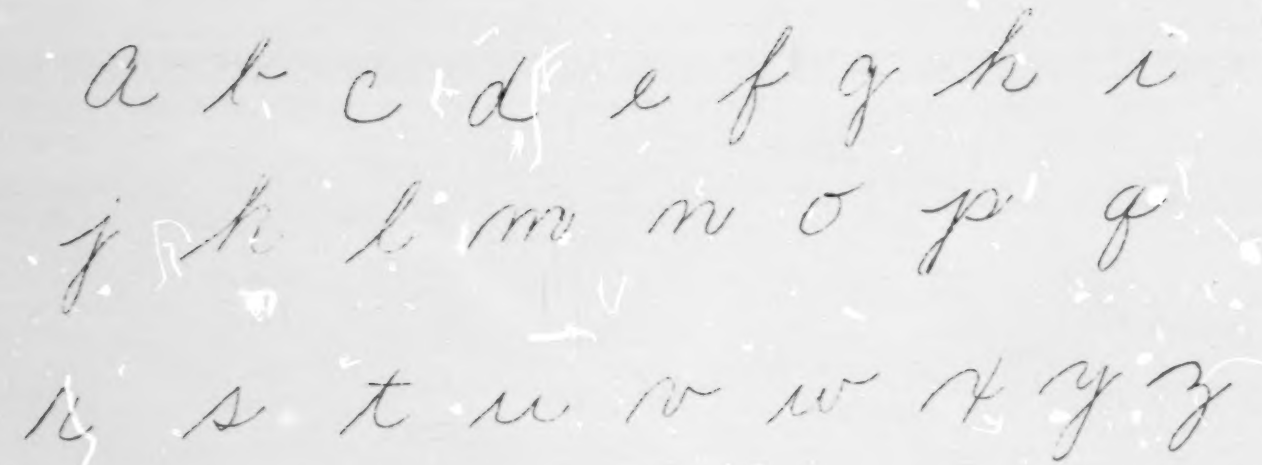
Since the third level children at Dale Avenue had just switched from manuscript to cursive it was expected that many children would get confused and mix cursive with manuscript. However, only 9% of the children did this.

Since the third level children had not been using manuscript in class it was expected that they might have forgotten how to form the manuscript letters. They did surprisingly well and a very small percentage of the children needed practice in printing most of the capitals, lower case letters and numbers. (See Table VIII).

In the farpoint manuscript sample 33% of the third level children left out punctuation, letters, words or numbers.

The Gesell research (Table I) indicates that at eight years of age (3rd grade level) many children now do cursive writing instead of printing. The Dale Avenue children had begun cursive writing in third level and were doing quite well. The percentages of children who needed practice in writing the capitals and lower case letters can be seen in Table IX.

TABLE VII



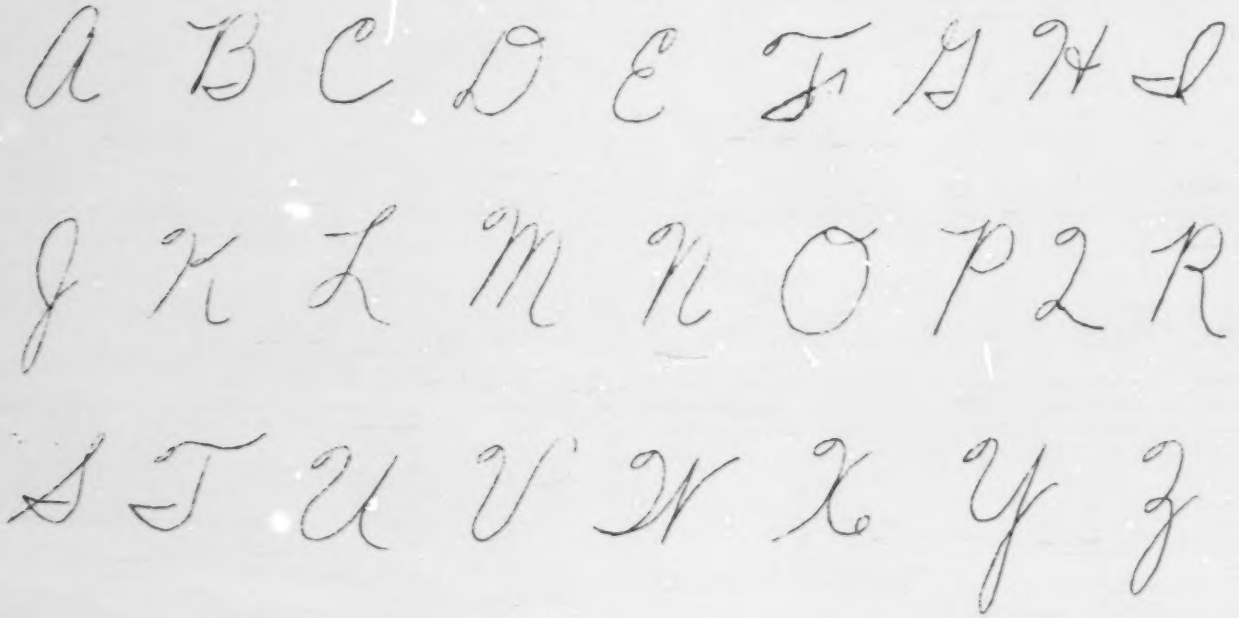


TABLE VIII

A - 4%	K - 14%	U - 13%	d - 8%	n - 7%
B - 4%	L - 5%	V - 9%	e - 4%	o - 1%
C - 4%	M - 22%	W - 10%	f - 2%	p - 1%
D - 11%	N - 20%	X - 6%	g - 5%	q - 7%
E - 1%	O - 7%	Y - 11%	h - 6%	r - 6%
F - 2%	P - 4%	Z - 3%	i -	s - 3%
G - 25%	Q - 5%		j - 4%	t - 7%
H - 1%	R - 4%	a - 1%	k - 18%	u - 1%
I -	S - 9%	b - 6%	l -	v - 1%
J - 8%	T - 5%	c - 1%	m - 5%	w - 3%
1 - 2%	4 - 4%	7 -	10 - 2%	x - 1%
2 - 3%	5 - 5%	8 - 5%		y - 5%
3 - 4%	6 - 10%	9 - 2%		z - 5%

TABLE IX

A - 2%	K - 20%	U - 15%	a - 14%	m - 7%
B - 6%	L - 13%	V - 38%	e - 2%	o - 5%
C - 9%	M - 8%	W - 67%	f - 33%	p - 12%
D - 18%	N - 8%	X - 56%	g - 8%	q - 21%
E - 5%	O - 5%	Y - 15%	h - 8%	r - 3%
F - 32%	P - 15%	Z - 29%	i - 3%	s - 4%
G - 17%	Q - 1.6%		j - 5%	t - 5%
H - 22%	R - 9%	a - 12%	k - 15%	u - 11%
I - 33%	S - 25%	b - 6%	l - 1%	v - 9%
J - 35%	T - 32%	c - 4%	m - 11%	w - 11%
				x - 29%
				y - 11%
				z - 43%

In general the handwriting of the third level children compared favorably with what the literature indicates children of their chronological age are able to accomplish.

Dr. Freeman in his reference manual for teachers explains that handwriting, which is one form of expression of language, is not merely a utilitarian art, it is a vital factor in the child's intellectual growth.

He further states that if writing is to play its part adequately both as a utilitarian means of communication and an instrument of intellectual growth, it must become a well-mastered and efficient habit. Writing must be legible in order to serve its purpose as an effective means of communication. Clearness of the writing and the ease and fluency with which it is produced has a beneficial effect on the thinking of the writer. Clearness in speaking or writing expresses clearness in thinking; it also has a reflex effect in promoting clearness in thinking. Hence the effective teaching of handwriting is not only a matter of practical importance; it is also a vital factor in the promotion of the child's intellectual growth.

It would appear that the Dale Avenue children have developed the tool of legible writing which provides them with an effective means of communication.

SOURCES

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